

Article

Yet Another Look at Negation*

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Abstract

Using the now-popular NEGP analysis, Radford (2009) explains syntactic derivations of negative sentences in present-day English. His explanation is based on the assumption that the negative word *not* is an adverb and is placed in spec-NEG. As for the NEG head, it is assumed to be a null version of Middle English *ne*, which is comparable to *ne* in negative sentences in French (e.g. *Je ne sais pas*). Also assumed in this explanation is post-syntactic nature of two operations known as Affix-Hopping and Do-Support. It is thus argued that the derivation of a sentence like *Didn't he win the race?* converges with application of these operations in the PF component, under another crucial assumption that there are syntactic trees in PF.

Against this backdrop, the present article first shows that this line of explanation is untenable. It then offers an alternative analysis, in which *not* of sentential negation is taken as the head of NEGP, and demonstrates how well this analysis captures relevant facts without difficulty. It also argues for syntactic nature of the two operations in question as well as nonexistence of syntactic trees in the PF component.

1. Introduction

Radford 2009 offers an analysis of negation “which has been widely adopted in work since the end of the 1980s, [in which] *not* is contained within a separate **NEGP** (= **N**egation **P**hrase) projection” (p. 137). In addition to evidence from languages like French, Radford (henceforth, R) presents the following sentence from Chaucer’s *Wife of Bath’s Tale* as further evidence:

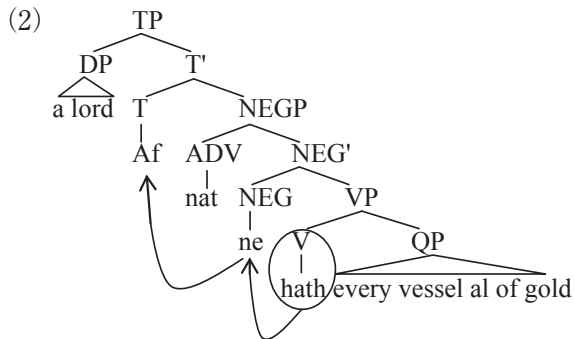
(1) (= R’s (41), p. 137)

A lord in his household *ne* hath *nat* every vessel al of gold. (lines 99-100)

‘A lord in his household does not have all his vessels made entirely of gold.’

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Notice that this Middle English sentence contains two negative words *ne* and *nat*, just like *ne* and *pas* in French (as in *Je ne sais pas*). And (2) below illustrates R's derivation of this negative sentence (Af = abstract inflectional affix).



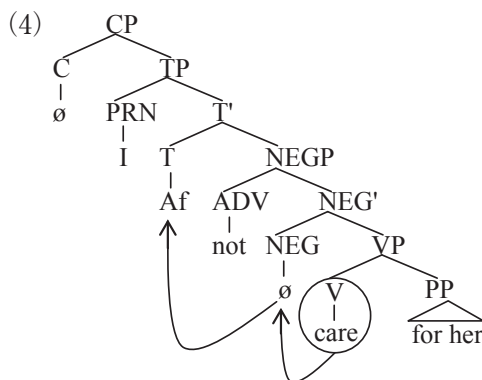
According to R, “the verb *hath* originates in the head V position of VP and from there moves to the head NEG position of NEGP, attaching to the negative prefix *ne* to form the complex head *ne+hath*, [which] then attaches to a present tense affix (*Af*) in T” (p. 137).

By Shakespeare’s time (hence in present-day English also), “*ne* had dropped out of use, leaving the head NEG position of NEGP null” (p. 138), but this doesn’t mean that the NEG head *ne* totally disappeared. R suggests that *ne* only lost its phonological features and therefore it still exists (although not pronounced) in present-day English. R indicates this null *ne* as \emptyset .

This null NEG constituent, as well as the finite affix in T, used to be a “strong” affix, meaning it had “a strong V-feature which [could] trigger movement of a main verb” (ibid.). Thus, the derivation of (3) below, which is from Shakespearean English, is taken to proceed as in (4).

(3) (= R’s (24a), p. 129)

I **care** not for her. (Thurio, *Two Gentlemen of Verona*, V.iv)



(4) indicates that both $[_T \text{ Af}]$ and $[_{NEG} \emptyset]$ were “strong magnets,” which were powerful enough to lift main verbs like *care* in Shakespearean English. And this explanation correctly captures the word order in (3).

In contrast, these affixes have become “weak” in present-day English, so they can no longer attract main verbs; thus, (5a) is ungrammatical in present-day English.

- (5) a. *I care not for her.
b. I care for her.

To compensate for the reduced strength of the affixes, present-day English has come to have an operation called “Affix Hopping” (p. 91), which is stipulated to apply to a weak affix and lower it to a main verb in the PF component. (6) below illustrates this PF attachment operation, and this is how the surface form in (5b) is said to be generated.

- (6) $[_{TP} \text{ I } [_T \text{ Af}] [_{VP} [_V \text{ care}] \text{ for her}]]$
-

A natural question to ask at this point is, why doesn’t Affix Hopping also apply to (5a) and rescue the negative sentence with the surface order of *I not care for her*? Here, there could be two ways to apply Affix Hopping, as illustrated in (7).

- (7) (= R’s (49a-b), p. 139)
- a. $[_{TP} \text{ I } [_T \text{ Af}] [_{NEGP} \text{ not } [\emptyset] [_{VP} [_V \text{ care}] \text{ for her}]]]]$
-
- b. $[_{TP} \text{ I } [_T \text{ Af}] [_{NEGP} \text{ not } [\emptyset] [_{VP} [_V \text{ care}] \text{ for her}]]]]$
-

But the movement operation in (7a), which skips over the head NEG position, violates the Head Movement Constraint in (8) and therefore is considered illicit.

- (8) (= R’s (31), p. 133)

Head Movement Constraint/HMC

Head Movement is only possible between a given head and the head of its complement.

The successive cyclic movement in (7b) doesn’t violate the HMC, but the first step of the movement to the head NEG position isn’t allowed, since the head NEG constituent \emptyset isn’t “the kind of head which is an appropriate host for a tense affix (at least, if we assume that a tense affix attaches to an overt verb, since NEG is neither overt nor a verb)” (p. 139).¹

Moreover, the second step too is deemed illegal, since it violates what is known as the Strict

Cyclicity Principle:

(9) (= R's (49), p. 140)

Strict Cyclicity Principle/SCP

At a stage of a derivation where a given projection HP is being cycled/processed, only operations involving the head H of HP and some other constituent c-commanded by H can apply.

Since R supposes that “(just like syntactic operations), morphological and phonological operations in the PF component apply in a **bottom-up** fashion, and process structures in a **cyclic** fashion (i.e. in a stepwise fashion, one projection at a time)” (p. 139), when the TP cycle is reached, only operations that involve T head are assumed to be allowed. However, the second step of the movement in (7b) is NEG to V, which excludes T; hence, it violates (9). Thus, there is no way to apply Affix Hopping to *I not care for her*, which is the underlying word order of (5a), and therefore the [_T Af] in this sentence gets stranded. This is the explanation R offers as the reason why the negative version of (5b), whether it is realized as *I care not for her* (= (5a)) or *I not care for her*, is deemed ungrammatical in present-day English.

Then, how do we derive a negative version of (5b) in present-day English, namely, (10)?

(10) (= R's (50), p. 140)

I do not care for her.

As is well known, “Do-Support” (R's chapter 4.8) comes to the rescue in these cases; as a result, the stranded [_T Af] gets spelled out as an appropriate form of *do*. For R, Affix Hopping and Do-Support are two sides of the same coin, so he defines them as in (11) below.

(11) (= R's (54), p. 141)

Affix Attachment

When the PF component processes a structure whose head H contains an (undeleted) weak affix which needs a verbal host and which is not already attached to an (auxiliary or main) verb

- (i) if H has a complement headed by an overt verb, the affix is lowered onto the relevant verb [= **Affix Hopping**]
- (ii) if not (i.e. if H does not have a complement headed by an overt verb and the affix is stranded), the affix is spelled out as an appropriately inflected form of DO [= **DO-support**]

This is how R derives negative sentences in present-day English.

This article has two main purposes. The first is to show that the explanation of negative sentences above is full of technical problems and therefore it cannot be maintained. Since Radford 2009 is a textbook meant for beginning linguistics students, this state of affairs is rather unfortunate. So I will suggest an alternative explanation that can be supported theoretically as well as empirically and thus is more suitable for beginning students. This is the second purpose of this article.

The article is organized as follows. In section 2, I will present problems that are inevitable in R's way of deriving negative sentences. In section 3, I will offer my alternative analysis of negation. More specifically, I will suggest that analyzing *not* of sentential negation as the head of NEGP solves all the problems pointed out in section 2. In section 4, I will then discuss two consequences of my analysis, namely, (i) syntactic (as opposed to phonological) nature of Affix Attachment and (ii) nonexistence of syntactic trees in PF. Section 5 summarizes the article.

2. Problems

2.1 NEG \emptyset

Let's start by examining the derivation of the negative sentence in (10) *I do not care for her*. According to R, what gets sent to the PF component is the syntactic object along the lines of (12) below.

(12) (= R's (50), p. 140)

$[_{CP} [_C \emptyset] [_{TP} I [_T Af] [_{NEGP} not [_{NEG} \emptyset [_{VP} care] for her]]]]]$

The finite zero complementizer is not affixal in nature, so it can stand alone (i.e. it must be a free morpheme). As for $[_T Af]$, Affix Hopping cannot apply to it (see the explanation of (7) above), so Do-Support applies, creating the PF form in (13).

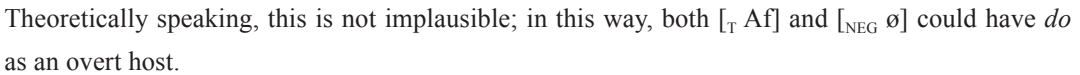
(13) (= R's (52), p. 141)

$[_{CP} [_C \emptyset] [_{TP} I [_T do] [_{NEGP} not [_{NEG} \emptyset [_{VP} care] for her]]]]]$

And this is how (10) is derived in present-day English, or so argues R.

But is $[_{NEG} \emptyset]$ fine in (13) as is? Wasn't it an affix? In other words, why is (13) grammatical with this affix stranded?

At this point, one might entertain the idea that Do-Support applies to $[_{NEG} \emptyset]$ first and then *do* accompanied by the NEG \emptyset (whatever form this combination may take) moves to $[_T Af]$, as illustrated in (14).



though the derivation still hasn't reached PF. For the sake of discussion, let's call this (syntactic) movement *n't*-cliticization. How is this operation possible? Remember that the first step of the cyclic movement version of Affix-Hopping in (7b) was deemed illicit owing to the fact that [_{NEG} \emptyset], which is not an overt (verbal) element, was considered an inappropriate host for [_T Af]? Then, *n't*, which too requires an overt (verbal) host, shouldn't be able to attach to [_T Af] in (18), since this affix isn't overt, either.

Thus, we naturally suspect that *n't*-cliticization might be a PF operation. In fact, R argues that a similar operation in (19), namely *have*-cliticization, takes place in the PF component. (R's exact formulation of *have*-cliticization will be given later as (46) in section 4.)

- (19) a. You have done your duty.
b. *You've* done your duty. (= R's (17a), p. 88)

Have in (19a) is assumed to attach to *you* and gets realized as 've on the pronoun in PF, creating the surface sequence in (19b). In R's own words, "[t]he kind of cliticization involved here is essentially phonological (rather than syntactic), so that [*you*] and *have* remain separate words in the syntax, but fused together in the PF component" (p. 88). This is reasonable, since (19a) and (19b) are truth-conditionally (\approx semantically) non-distinct, which suggests that *have*-cliticization must be a purely phonological operation (i.e. (19a) and (19b) are syntactically the same). Likewise, (10) and (17) are truth-conditionally identical too, so it's only fair to suspect that *n't*-cliticization may also be a PF operation (but see my alternative analysis of *n't* in section 3).

However, R's treatment of *n't*-cliticization is totally different. This is amply clear in his explanation of the derivation of (20).

- (20) (= R's (55e), p. 142)
Didn't he win the race?

After forming the T-bar *Af n't \emptyset win the race*, the derivation is said to proceed as follows (p. 143):

Suppose that the clitic negative *n't* then attaches to the end of the tense affix, with the original occurrence of *n't* in spec-NEGP ultimately being deleted, so forming the string *Af+n't n't \emptyset win the race*. The resulting T-bar is in turn merged with the subject *he*, forming the TP *He Af+n't n't \emptyset win the race*. This is then merged with an interrogative C constituent containing a null affix \emptyset , forming the CP [(21)] below:

$$[(21)] [_{CP} [_{C} \emptyset] [_{TP} \text{he } [_{T} \text{Af}+n't] [_{NEGP} n't [_{NEG} \emptyset] [_{VP} [_{V} \text{win}] \text{the race}]]]]]$$

Since the null affix in C is strong and has a tense feature, it attracts all the material contained in T to adjoin to it, so deriving:

$$[(22)] [_{CP} [_{C} Af+n't+\emptyset] [_{TP} \text{he} [_{T} Af+n't] [_{NEGP} n't [_{NEG} \emptyset] [_{VP} [_{V} \text{win}] \text{the race}]]]]]$$

The resulting syntactic structure is then handed over to the PF component.

Consequently, Do-Support applies to $Af+n't+\emptyset$ in C in PF, spelling out this complex head as *didn't*. Thus, the surface form in (20) is obtained.

This derivation is doubly dubious. First, as was already mentioned, how can the bound morpheme $n't$, which requires an overt host, attach to $[_{T} Af]$, which is covert? Second, how can $[_{T} Af]$, which is now accompanied by $n't$, move to attach to $[_{C} \emptyset]$? If $[_{T} Af]$ isn't allowed to move to $[_{NEG} \emptyset]$ for the specific reason that $[_{NEG} \emptyset]$ isn't an overt verbal host (see (7b)), this T-to-C movement too should be banned, since $[_{C} \emptyset]$ isn't an overt verbal host, either. (Notice that $Af+n't$ in T is not a free morpheme and so requires such a host.) Even from the viewpoint of $[_{C} \emptyset]$, this movement shouldn't be allowed either, since R specifically writes that “the null complementizer in an interrogative main clause is **affixal** in nature, and so must be attached to an overt **host** of an appropriate kind” (p. 122). However, the combination of $[_{T} Af]$ and $n't$ is not a (completely) overt host.

2.3 Relativized minimality

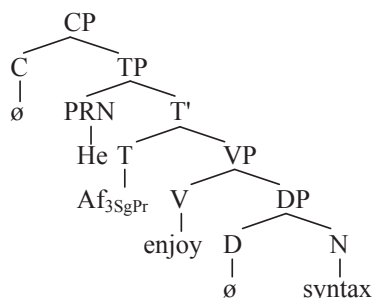
At this point, R might want to say $n't$ -cliticization and T-to-C movement in (22) are allowed precisely because they take place in the syntactic component, in which phonological considerations are totally irrelevant. In this regard, let's consider the derivation of (23), which is helpful in understanding how syntax can be viewed to be independent of phonology.

(23) (= R's (22a), p. 89)

He enjoys syntax.

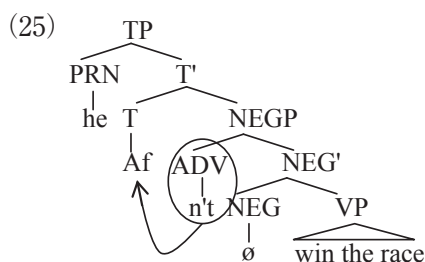
In the derivation of (23), what gets sent to the PF component may be represented along the lines of (24) below.

(24) (adapted from R's (25b), p. 91; 3 = third person, Sg = singular, Pr = present tense)



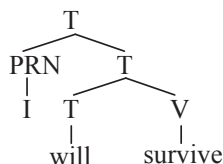
This syntactic structure also gets sent to the LF component, where it is semantically processed and given an appropriate interpretation without any problems. The fact that inflectional information, such as person, number and tense, in T is separated from the verb *enjoy* is not in the least a hindrance in interpreting the sentence, since there is nothing that requires inflectional information to be realized on a verb, either in the syntax or in LF. It becomes an issue only in PF, where a pronounceable structure must be obtained. So Affix Hopping takes place in PF and lowers the abstract affix Af_{3SgPr} to *enjoy*, spelling out the verb as *enjoys*, which is now pronounceable, as opposed to the linear sequence of $Af_{3SgPr}+enjoy$, which is not. Thus, the derivation of (23) converges. So, using the same logic, one may argue that the derivation depicted in (22) is unproblematic, since all the operations there are syntactic, meaning that phonological considerations are all beside the point.

However, *n't*-cliticization will then pose a different kind of problem as a syntactic operation. This is so because the movement of *n't* must then be a movement of a phrase to a head position. Look at (25).



As is clear from this tree diagram, *n't* has the status of a phrase, and yet it moves to the T head position. We know the adverb *n't* in (25) is a phrase, since it is the largest expression headed by *n't* itself. In case this isn't ridiculously obvious, consider the following (partial) tree diagram of the sentence *I will survive*:

(26) (= R's (60), p. 65)



Following the idea of “bare phrase structure” (Chomsky 1999, 2007), R writes (p. 65):

Information about projection levels is omitted in [(26)] because it is redundant since it is predictable from looking at the relative positions of constituents within a given structure. Simply by looking at the positions they occupy in the tree [(26)], we can tell that *will* is the minimal projection of *will* (i.e. it is the smallest expression headed by *will*), that *will survive* is an intermediate projection of *will* (by virtue of being neither the smallest nor the largest expression headed by *will*) and that *I will survive* is the maximal projection of *will* (by virtue of being the largest expression headed by *will*). Similarly, we can tell that the *V survive* is both a minimal and a maximal projection, in that it is both the smallest and the largest expression headed by *survive*: hence (e.g.) it can behave like a maximal projection and undergo preposing (as in *Survive, I will*). In much the same way, we know from looking at the structure in [(26)] that the pronoun *I* is likewise both a minimal and a maximal projection: given their status as maximal projections, it follows that pronouns can undergo preposing (as with the pronoun *him* in *Him, I would never trust*).

So, as opposed to [_T Af] and [_{NEG} ø] in (25), both of which are smallest projections (= heads), *n't* clearly has the status of a maximal projection (= a phrase). But then, *n't*-cliticization in (25) goes directly against the Relativized Minimality Condition, which is originally devised by Rizzi (1990):

(27) (= R's (61), p. 176)

Relativized Minimality Condition/RMC

A constituent X can only be affected by (e.g. agree with or be attracted by) the minimal (i.e. closest) constituent of the relevant type above it (i.e. c-commanding X).

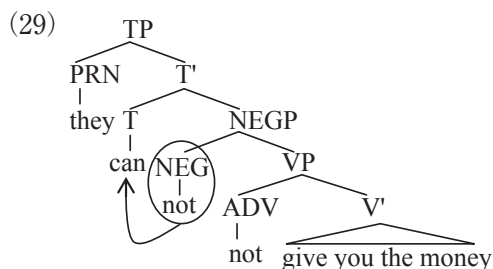
According to the RMC, only a head is allowed to move to a next-higher head position, whereas a phrase must move into a next-higher specifier position (of the relevant kind). So the phrase *n't* shouldn't be able to move to the T head position in (25). Thus, it must be concluded that R's analysis of overt *n't* movement cannot be taken at face value.

3. Alternative Analysis of Negation

The discussions above lead me to suggest an alternative analysis of negation along the following lines. There must be two different types of *not*, one a negation marker (NEG), and the other an adverb (ADV). The former always negates T head (= sentential negation), whereas the latter does other constituents in general (= phrasal negation). $[_{NEG} \text{not}]$ projects NEGP, which serves as a complement of T; this *not* is a minimal projection (= a head). On the other hand, $[_{ADV} \text{not}]$ is just another adverbial adjunct, modifying other constituents in phrase positions; this *not* is thus a maximal projection (= a phrase) when used. This dual characterization of negation predicts that there must be sentences in which these two types of *not* co-occur, and indeed, this prediction is borne out.⁴ Look at (28), which is from Feynman 1985:257.

(28) They can't not give you the money.

This sentence can be paraphrased as *It's impossible for them not to give you the money*. The relevant part of the structure of (28) may be represented as follows:



The movement of $[_{NEG} \text{not}]$ in (29) is an overt head movement, which seems obligatory; $[_T \text{Af}]$ in present-day English is said to have a weak V-feature, and yet this feature is still strong enough to overtly attract auxiliary verbs like *be* and *have*.⁵ Since $[_{NEG} \text{not}]$ always negates whatever comes to occupy the head T position, it is not so preposterous to assume that this *not*, as opposed to ADV *not*, also has a V-feature and gets attracted by $[_T \text{Af}]$ (in other words, $[_{NEG} \text{not}]$ must be “light enough” to be lifted, just as auxiliary *be* and auxiliary *have* are).⁶ As a result of this NEG-to-T movement, a negative modal *cannot* is formed in T. Eventually, the CP *They cannot not give you the money* is formed and handed over to the PF component, in which “Negative Contraction” (Radford 1988), an optional morphological operation, may apply to *cannot*, creating the fused form *can't*, as in (28). Thus, I’m departing from the idea of *n't*-cliticization as a syntactic operation in (18) and suggesting, instead, that Negative Contraction takes place exclusively in PF.

This analysis easily accommodates the ambiguity of (30), which R discusses in his 1988 book:

(30) (R's (42), 1988:66)

The president could not ratify the treaty.

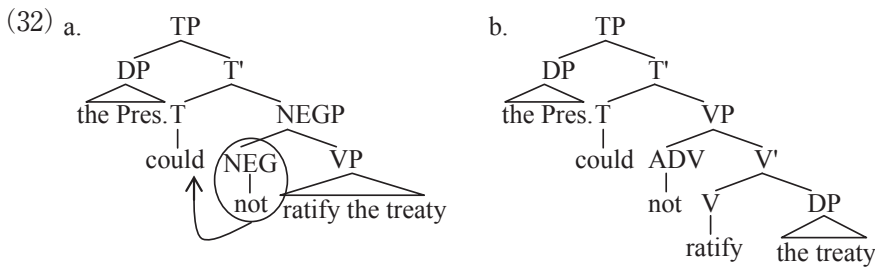
According to R, this sentence has the following two interpretations:

(31) (= R's (43), *ibid.*)

a. It would not be possible for the President to ratify the treaty.

b. It would be possible for the President not to ratify the treaty.

And in my analysis of negation, (31a) and (31b) will correspond to the following two tree diagrams, respectively:



What should be noted here is that *not* can never overtly move to accompany *could* in (32b), since that would be a phrase-to-head movement, a violation of the RMC in (27). Thus, [_T could] in this structure can never be realized as a syntactic word *could+not* under T, precluding the possibility of Negative Contraction, which only applies to syntactic words, in PF. In contrast, the NEG-to-T movement in (32a) will be just an ordinary head-to-head movement, so it is a legitimate operation to create the form *could+not* under T. If so, when Negative Contraction applies to (30), it is predicted that the resulting sentence will only have the interpretation in (31a), which is indeed the case. Notice that (33) below can only mean (31a), never (31b).

(33) (= R's (50), Radford 1988:68)

The President couldn't ratify the treaty.

Interestingly, R devised from this fact the following rule for Negative Contraction, which appears descriptively adequate:

(34) (= R's (49), Radford 1988:68)

NEGATIVE CONTRACTION is usually only possible where the negative modifies the Modal, and not where it modifies the following Verb Phrase.

But this rule is redundant in my analysis, since given the structures in (32a-b), the unambiguity of (33) is totally predictable from the RMC.

At this point, it should be noted that even if Negative Contraction doesn't take place in PF and therefore (33) gets realized as (30), the single constituent status of *could not* still seems indisputable, in spite of the fact that orthographical convention requires us to spell the constituent as two words. To see this, compare the following two sentences:

(35) (= R's (46), Radford 1988:67)

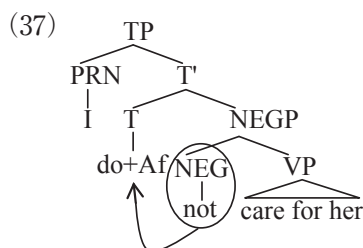
- a. The President could not simply ratify the treaty.
- b. The President could simply not rarify the treaty.

As R himself notes, (35b), in which *could* and *not* are separated by *simply*, can never be understood as *The president couldn't simply ratify the treaty*, which corresponds to the meaning of (35a). This state of affairs is totally compatible with my analysis of NEG-to-T movement in (32a), which indicates that *could* and *not* form a single constituent (= a syntactic word) under T; this is why *simply* cannot intervene between *could* and *not*. In contrast, *could* and *not* don't form a constituent in (32b), so *simply* can be safely positioned between them. Thus, (35b) only reflects the structure in (32b), not (32a).

Now, let's turn to the problems that I identified in section 2. First, I pointed out the problem of a stranded negative affix [_{NEG} \emptyset] in sentences like (10) *I do not care for her* in section 2.1. The relevant structural analysis of this sentence was (13), which is repeated below as (36).

(36) [_{CP} [_C \emptyset] [_{TP} I [_T do] [_{NEGP} not [_{NEG} \emptyset] [_{VP} care] for her]]]]

Here, Do-Support supplies [_T Af] with a host modal, but [_{NEG} \emptyset], which is stipulated to be an affix (= a bound morpheme), is left stranded. In my analysis, this problem doesn't arise, since the NEG head will be realized as *not*. The relevant part of the structure will be something along the lines of (37), where there are no stranded affixes after Do-Support.



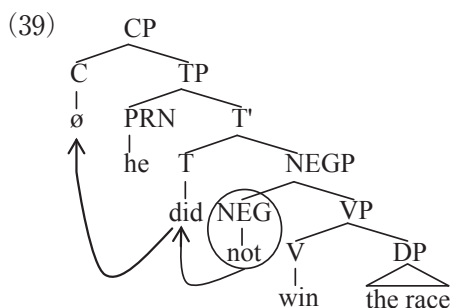
Then in section 2.2, I pointed out problems in R's analysis of sentences like (20) *Didn't he win the race?* The analysis in point was (22), repeated here as (38).

- (38) [_{CP} [_C *Af+n't+ø*] [_{TP} *he* [_T *Af+n't*] [_{NEGP} *n't* [_{NEG} *ø*] [_{VP} [_V *win*] *the race*]]]]

What was problematic in (38) was the target of each movement. First, *n't* moves to [_T *Af*], which is a covert constituent. Then, the combination of [_T *Af*] and *n't* moves to [_C *ø*], which is also a covert constituent. Given the fact that Affix-Hopping in negative sentences is prohibited for the specific reason that [_{NEG} *ø*] is covert and thus cannot be an appropriate host for the lowering [_T *Af*], we don't know how these movement operations can be justified. Moreover, even from the viewpoint of [_C *ø*], *Af+n't* cannot be an appropriate host for the affixal complementizer; [_C *ø*] requires an overt host, but *Af+n't* isn't (totally) overt. So the convergence of the syntactic derivation in (38) is a mystery.

What is more, as I showed in section 2.3, specifying these operations as purely syntactic and so impervious to phonological concerns does not make matters any better. Under this view, *n't*-cliticization (i.e. ADV-to-T movement) will be a phrase-to-head movement and therefore it violates the RMC. So we face a difficulty on this route as well.

In my analysis, on the other hand, the derivation of (20) will be taken to proceed as in (39) below, instead of (38).



What I'm suggesting here is that Do-Support takes place as soon as T-bar is formed in the overt syntax. Thus, when *not* moves to T, it already has an overt host there. (According to R's "Simultaneity Condition" (p. 246), Do-Support and NEG-to-T movement should take place at the same time, which I think is true.⁷ Even if these operations are viewed to take place simultaneously, however, it can still be said that *not* will have an overt host when it moves to T.) Furthermore, this operation, which obeys the HMC in (8), also obeys the SCP in (9), since it involves *did* (= the head of TP) and a constituent it c-commands, namely, [_{NEG} *not*]. And the second step of the movement operation (i.e. T-to-C movement) at the CP cycle is also unproblematic, since not only it obeys (8) and (9), but also [_C *ø*] is now viewed to attract an overt host. (It goes without saying that from the viewpoint of *did+not* in T as well, this operation is totally fine; being a free (complex)

morpheme, *did+not* doesn't require an overt morphological host when it moves.)

At this point, I need to mention one more minor detail of the derivation illustrated in (39). After T-to-C movement, what is obtained in C is $\emptyset+did+not$, a legitimate syntactic object. Although the application of Negative Contraction to *did+not* in declarative sentences is an optional PF operation (i.e. *He did not win the race* = *He didn't win the race*, in terms of meaning), $\emptyset+did+not$ in C must be spelled out with Negative Contraction without fail:

- (40) a. Didn't he win the race? (= (20))
 b. *Did not he win the race?

If Negative Contraction didn't apply, the resulting sentence would be ungrammatical, as the contrast between (40a-b) shows.

And I take this to be a morphological characteristic of the finite interrogative complementizer \emptyset . That is, whenever it attaches to a negative auxiliary such as *did+not*, it marks a need to apply Negative Contraction in PF. As a result, a syntactic structure [_{CP} $\emptyset+did+not$ he win the race] is always rendered into (40a) in the PF component.

4. Earliness Principle

I now want to turn to theoretical consequences of my alternative analysis. First, we can no longer maintain Affix Attachment in (11) as a PF operation.

As I mentioned in section 1, R supposes that “(just like syntactic operations), morphological and phonological operations in the PF component apply in a **bottom-up** fashion, and process structures in a **cyclic** fashion (i.e. in a stepwise fashion, one projection at a time)” (p. 139). At the same time, R proposes the following UG principle, too.

- (41) (= R's (46), p. 139)

Earliness Principle

Operations must apply as early as possible in derivation.

But notice that R's Affix Attachment in (11), repeated below as (42), goes directly against this principle, because it presupposes non-application of Affix Hopping and Do-Support in the syntactic component.

- (42) **Affix Attachment**

When the PF component processes a structure whose head H contains an (undeleted) weak affix which needs a verbal host and which is not already attached to an (auxiliary

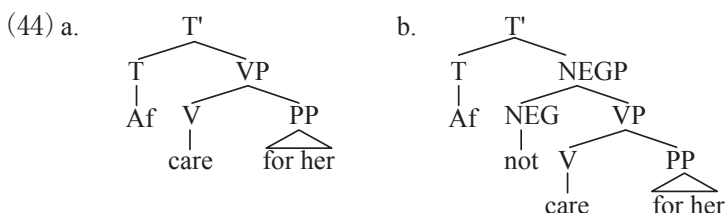
or main) verb

- (i) if H has a complement headed by an overt verb, the affix is lowered onto the relevant verb [= **Affix Hopping**]
- (ii) if not (i.e. if H does not have a complement headed by an overt verb and the affix is stranded), the affix is spelled out as an appropriately inflected form of DO [= **DO-support**]

Let's see how this is so by considering the derivations of (5b) and (10), repeated here as (43a-b).

- (43) a. I care for her. (= (5b))
 b. I do not care for her. (= (10))

The relevant parts of the derivations are given below ((44b) reflects my analysis of negation, not R's, but it won't affect my argument in this section in any way).



(44a) illustrates the point at which a finite inflectional affix is merged with VP in the derivation of the affirmative sentence in (43a). Since this T head is an affix, it needs to attach to an appropriate host. And yet, it is a weak affix, so it cannot attract a main verb like *care*. According to Affix Attachment in (42), [_T Af] must wait until the derivation moves on to PF, where its morphological needs are eventually satisfied. But why can't it undergo Affix Hopping right away at the point of (44a) in the syntax, especially when there is a UG principle like (41)?

Likewise, (44b) indicates the point at which a finite inflectional affix is merged with VP in the derivation of the negative sentence in (43b). Again [_T Af] requires an overt verbal host, but there is no way for it to lower to *care* (i.e. Affix Hopping) without violating the SCP in (9). Given the Earliness Principle in (41), therefore, Do-Support should apply immediately, but this is somehow blocked by (42), which presupposes that Do-Support applies in PF.

Notice that what is preventing immediate application of Affix Hopping/Do-Support is the (dubious) stipulation embedded in the definition of Affix Attachment in (42), which simply assumes that these operations take place in PF. But there doesn't seem to be any theoretical/empirical foundation for this assumption at all. If fact, applying Affix-Hopping and Do-Support right away in (44a) and (44b), respectively, will lead to convergent derivations of (43a-b)

without violating the Earliness Principle. Besides, sections 2.1 to 2.3 have already revealed unfortunate results of upholding Affix Attachment as worded in (42), so it seems best to dismiss this assumption of PF application of Affix Attachment.

Second, we shouldn't assume that there are tree structures in PF. Since PF is supposed to be the component that gives "us a phonetic spellout for each word, telling us how it is pronounced" (p. 14), it's counterintuitive to posit that there are trees in this component; we can only pronounce linear sequences of words, but not hierarchical structures. However, R obviously believes that there are trees in PF, since he says "morphological and phonological operations in the PF component apply in a **bottom-up** fashion," as was mentioned earlier. Notice that this statement crucially presupposes existence of syntactic trees in PF; applying operations in a bottom-up fashion can't be done without such structures.

In fact, if we carefully look at specific examples of PF operations, we will notice a problem in the assumption that there are trees in PF. In this connection, let's examine again the derivation of a sentence that involves *have*-cliticization, which R takes to be a PF-operation, as we noted in section 2.2. (19) is repeated below as (45).

- (45) a. You have done your duty.
b. *You've* done your duty.

(46) describes (syntactic!) conditions for this PF operation.

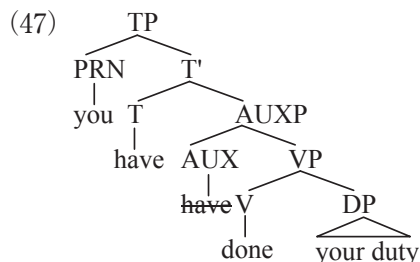
(46) (= R's (19), p. 88)

Have-cliticization

Have can encliticize onto a word W ending in a vowel or diphthong provided that

- (i) W c-commands *have* and
- (ii) W is immediately adjacent to *have*.

Let's see how the derivation of (45b) fares in terms of these conditions. Look at the structural analysis of the relevant part of (45b):



In (47), *you* c-commands *have*, and *you* and *have* are immediately adjacent to each other. Therefore, *have* can encliticize onto *you*, creating the PF form *you've*.

But notice that this movement operation is head to phrase, so it violates the RMC. Trying to circumvent this problem by saying that the RMC is only relevant to syntactic operations is an ad hoc solution that will raise even more difficult questions. For example, (i) if so, why is the RMC only relevant to syntactic operations when there are syntactic trees in PF as well?, and (ii) what guarantees that *have*-cliticization as explained by R is a PF operation, especially when it is required to meet a syntactic condition like c-command (= (46i))?

Suppose, instead, that there are no trees in PF. Then, (45a) will look exactly like (45a), that is, a simple linear sequence of *you have done your duty*. Then, *have*-cliticization may be invoked owing to the string adjacency of *you* and *have*, and when it is, the sentence with cliticization in (45b) is obtained.

If this explanation is on the right track, *have*-cliticization should be renamed something like “*Have*-Contraction,” following R’s (1988) Negative Contraction, which we saw in section 3. This is so, because “*have*-cliticization” has a ring of a syntactic movement operation, but we now know that it must be a purely phonological operation.

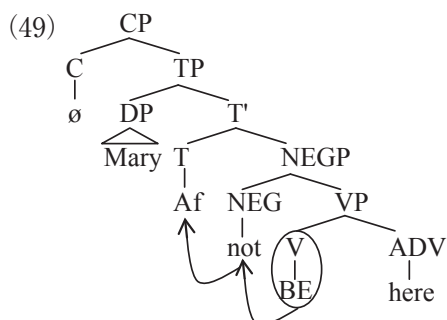
5. Summary

Thus, it seems clear that R’s treatment of negation doesn’t work, since it is erroneously dictated by Affix Attachment in (42), which presupposes that Affix Hopping and Do-Support take place in the PF component. If this presupposition is discarded, the Earliness Principle will be upheld and derivations of negative sentences can be explained much more straightforwardly by analyzing *not* of sentential negation as the head of NEGP, as was demonstrated in section 3.

To sum up my alternative analysis of negation, I would like to present a derivation of a sentence that contains *be* as a main verb. Derivations of sentences with auxiliary *be* and auxiliary *have* can be explained in basically the same way.

Look at (49), which illustrates how the derivation of (48) proceeds before it reaches PF.

(48) Mary is not here.



In section 3, [_{NEG} not] was characterized as an item that possesses a V-feature and is light enough to be attracted by [_T Af], to which Do-Support (simultaneously) applies. In the case of (49), the V-feature of [_{NEG} not] in turn acts as a “magnet” itself and attracts [_V BE], which is also light, at the NEGP cycle.⁸ Then, at the T-bar cycle, this newly created constituent *BE+not* gets attracted by [_T Af], which is just strong enough to lift light verbs and [_{NEG} not]. These two operations satisfy the Earliness Principle, since the morphological needs of [_{NEG} not] and [_T Af] (i.e. their needs to attach to verbal hosts) are immediately satisfied at each cycle. The operations also obey the HMC. And when the whole CP in (49) is created, it is handed over to PF, where the derivation eventually converges as the grammatical sentence in (48).

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Endnotes

- 1 R adds to his definition of Affix Hopping this [_T Af]'s need for an appropriate host as a condition in parentheses:

(i) (= R's (26), p. 91)

Affix Hopping

When some constituent C contains an unattached affix *Af*, in the PF component *Af* is lowered onto the head H of the complement of C (provided H is an appropriate **host** for the affix to attach to).

- 2 R points out that *must* is a “wide-scope modal” (p. 135), since it always takes wide scope with respect to negation:

(i) (= R's (38a), *ibid.*)

You must not do that. (= ‘It is *necessary* for you not to do that.’)

Therefore, he states that “wide-scope modals like *must* are directly generated in T” (ibid).

- 3 One might entertain the idea of applying Affix Hopping to [_{NEG} \emptyset], lowering it to *care* in the PF component. Theoretically, this seems allowable, but empirically, it appears impossible to support. But after taking into consideration the discussion in section 2.3, I will suggest an alternative analysis of negation in section 3, which will obviate this empirically untestable option altogether.
- 4 It might be the case that both *ne* and *nat* in (1) have come to be pronounced as *not* in present-day English.

However, as shown in (29), [_{ADV} not] never appears in spec-NEG, in contrast to *nat* in (2). As the translation of (1) ‘A lord in his household does not have all his vessels made entirely of gold’ indicates, two negative words, *ne* and *nat*, originating within the same NEGP as its head and specifier respectively, do not cancel each other out. Likewise, *ne* and *pas* in *Je ne sais pas* don’t either; this French sentence still means ‘I don’t know,’ not ‘I know,’ despite the presence of two negative words in its NEGP (before NEG-to-T movement). This fact is compatible with the structure (i.e. (29)) and meaning of (28). In this sentence, two instances of *not*, which belong to two different phrases, do seem to cancel each other out; the sentence means something along the lines of ‘They must give you the money,’ not ‘They cannot give you the money.’

From this observation, we may be led to suspect that there might be LF movement to spec-NEG of negative constituents like *nobody* and *nowhere* in informal English, achieving negative concord between the NEG head and its specifier:

- (i) You don’t know nothing.
LF: [_{CP} \emptyset [_{TP} you [_{NEGP} nothing don’t [_{VP} know ~~nothing~~]]]]
- (ii) I didn’t go nowhere.
LF: [_{CP} \emptyset [_{TP} I [_{NEGP} nowhere don’t [_{VP} know ~~nowhere~~]]]]

This is so because unlike (28), in negative sentences like (i) and (ii), double negation doesn’t result in affirmative meaning. Pursuing this possibility, however, is beyond the scope of the present article, so I leave it for future research.

- 5 See R’s chapter 4.6, where he discusses auxiliary raising. In fact, he analyzes (i) below as having the derivation indicated in (ii).

- (i) (= R’s (36b), p. 135)
He has not done it.
- (ii) (= R’s (37b), ibid.)
[_{CP} [_C \emptyset] [_{TP} He [_T *has*] not [_{AUXP} [_{AUX} *has*] [_{VP} [_V done] it]]]]

After this chapter, however, R somehow disregards auxiliary raising without providing any clear reasons. Quite puzzling, to say the least.

- 6 But this doesn't mean that [_{NEG} not] can function as a full-fledged (auxiliary) verb. This is so, because in the derivation of a sentence like (10) *I do not care for her*, NEG-to-T movement is never enough to produce a grammatical result. (ib) below is what is obtained from (ia) after this movement, but it is ill-formed. In order to derive a grammatical sentence, we must also resort to Do-Support, as in (ic).

- (i) a. I [_T Af] [_{NEG} not] care for her.
 b. *I not care for her. (= I [_T Af+not] [_{NEG} ~~not~~] care for her)
 c. I do not care for her.

This is not surprising, however, since, after all, [_{NEG} not] is categorially just a negative marker, not a verb, and [_T Af] requires a verbal host.

- 7 R formally defines this condition as follows:

- (i) (= R's (18), p. 246)

Simultaneity Condition

All syntactic operations involving a given probe P apply simultaneously.

Although R describes this condition using the terminology from a new theory of agreement that involves "probe" and "goal" (see R's chapter 7), the gist of it is still applicable to simultaneous application of Do-Support and NEG-to-T movement in the text.

- 8 If the verb is an ordinary verb like *care*, as in (44b), [_{NEG} not] won't be able to attract it. In that case, [_{NEG} not]'s need to attach to a verb will be satisfied at the T-bar cycle, where [_{NEG} not] moves to accompany an appropriate form of *do* (owing to Do-Support) under T. Do-Support does not apply to [_{NEG} not], presumably because [_{NEG} not] already has a morphological form and is not an inflectional affix, which Do-Support targets.